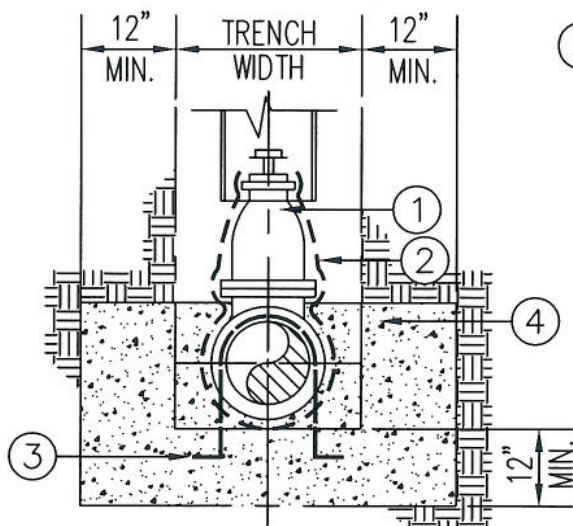


TRENCH ELEVATION
PVC PIPE

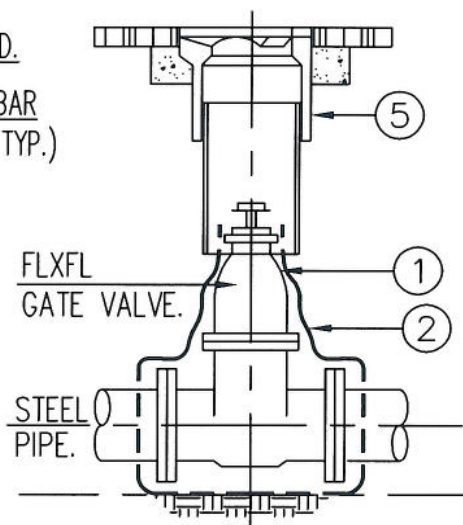
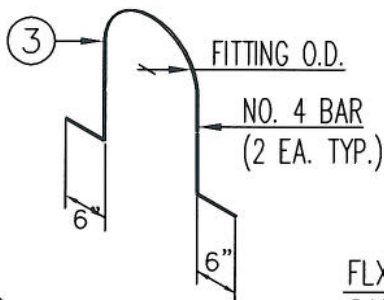


TRENCH SECTION
(TYPICAL)

NOTES:

1. SEE SPECIFICATIONS FOR BURIED FLANGE AND VALVE REQUIREMENTS.
2. SEE DRAWING NO.19 FOR THRUST BLOCK BEARING AREAS.
3. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SECT. 09902.

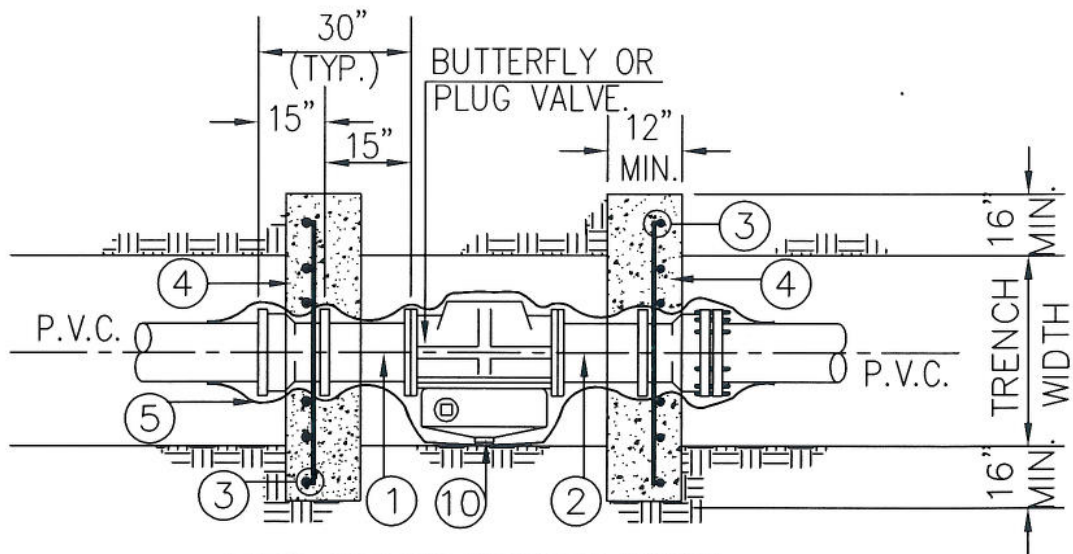
REINFORCING STEEL DETAIL.



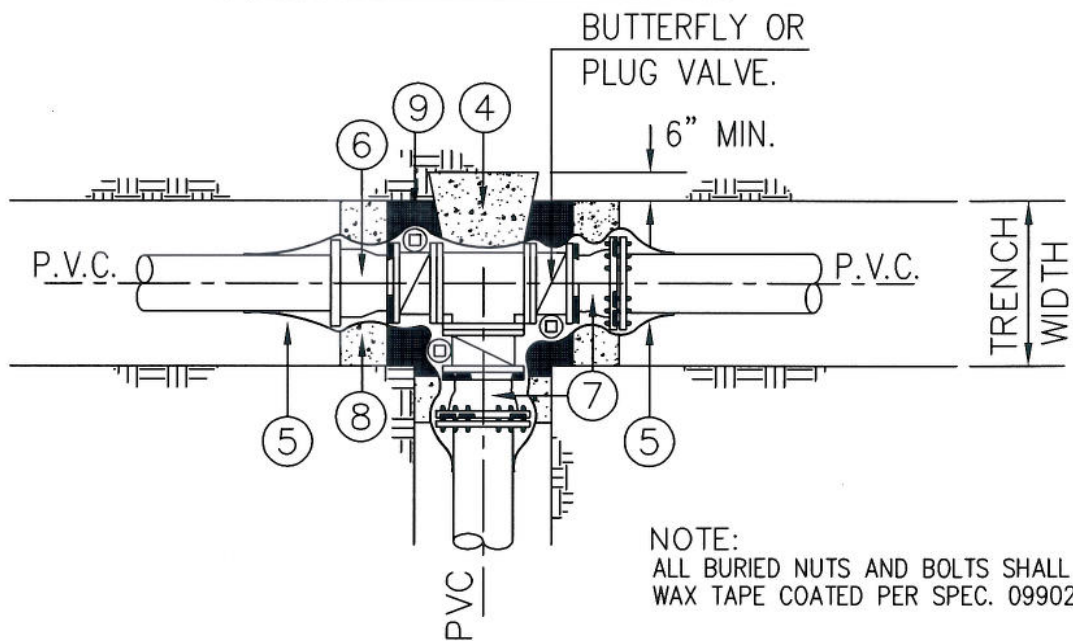
TRENCH ELEVATION
STEEL PIPE

ITEM	DESCRIPTION	SPEC/DWG
1	GATE VALVE	
2	POLYETHYLENE ENCASEMENT	
3	NO. 4 REINFORCING STEEL.	
4	CONCRETE THRUST/ANCHOR BLOCK. (3250 P.S.I.) 560-C-3250	W-19
5	VALVE BOX ASSEMBLY.	W-13

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			GATE VALVE INSTALLATION	CITY ENGINEER DATE
			P.V.C., & STEEL PIPE.	STANDARD DWG. NO. W-16



LINE VALVE INSTALLATION

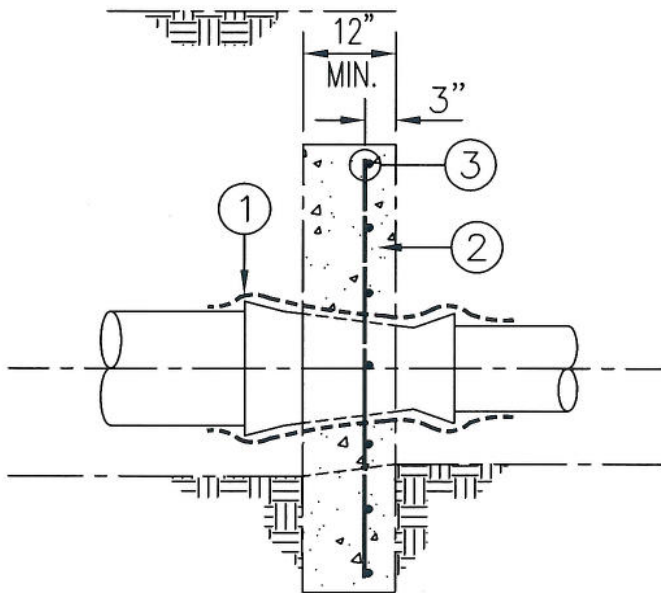
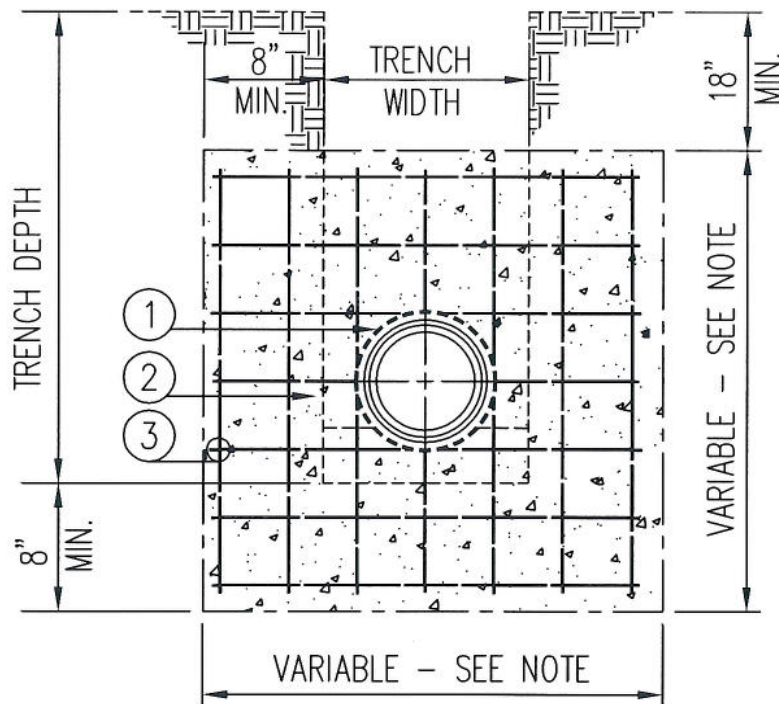


NOTE:
ALL BURIED NUTS AND BOLTS SHALL BE
WAX TAPE COATED PER SPEC. 09902

TEE ASSEMBLY

ITEM	DESCRIPTION	SPEC/DWG
1	FOR A.C.P. - 30" LONG FL X PJ WALL PIPE.	
2	FOR P.V.C. - 30" LONG FL X MJ WALL PIPE.	
3	NO. 4 REINFORCING STEEL 6" O.C. EACH WAY.	
4	CONCRETE THRUST BLOCK. (3250 P.S.I.) 560-C-3250	W-19
5	POLYETHYLENE ENCASEMENT	
6	FOR P.V.C. - FL X PJ ADAPTER.	
7	FOR P.V.C. FL X MJ ADAPTER.	
8	CONCRETE SUPPORT.	
9	SANDBAGS.	
10	BUTTERFLY OR PLUG VALVE	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			BUTTERFLY & PLUG VALVE INSTALLATION FOR P.V.C.	CITY ENGINEER DATE
				STANDARD DWG. NO. W-17

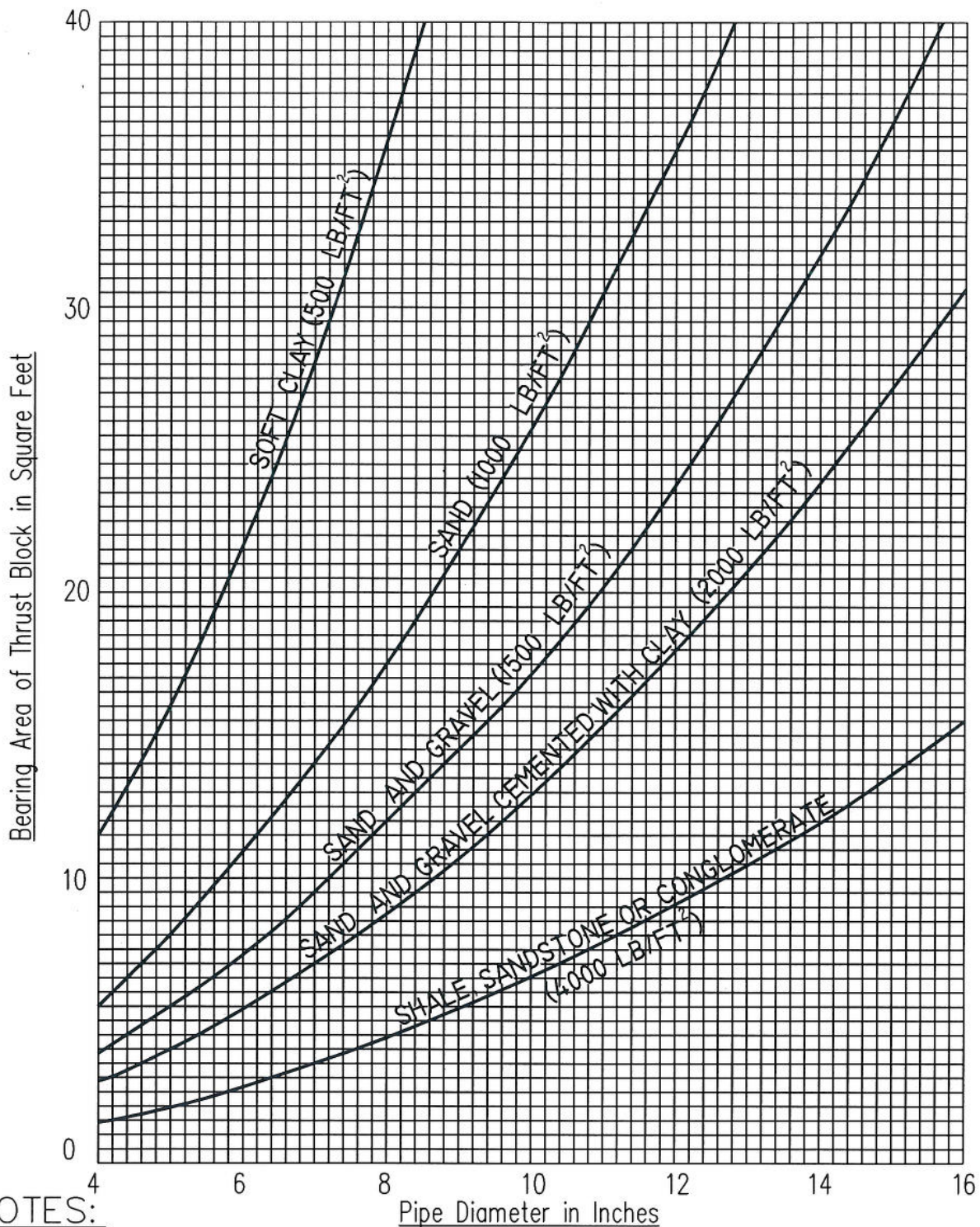


NOTES:

BEARING AREA SHALL BE THE DIFFERENCE BETWEEN THE BEARING AREAS REQUIRED FOR THRUST ANCHORAGE OF MAINS ON EACH SIDE OF REDUCER AS FOUND FROM STD. DWG. 19 PLUS THE AREA OF THE TRENCH OPENING.

MINIMUM DIMENSIONS SHOWN SHALL BE ADHERED TO.

ITEM	DESCRIPTION	SPEC/DWG
1	POLYETHYLENE ENCASEMENT	
2	CONCRETE THRUST BLOCK (560-C-3250 CONCRETE).	W-19
3	NO. 4 BAR 9" ON CENTER EACH WAY.	
REV.	APPROVED	DATE
CARLSBAD MUNICIPAL WATER DISTRICT		
THRUST ANCHOR FOR WATER MAIN		
REDUCER - 4 THRU 16 INCH.		
Robert T. Johnson Jr. 7/10/08		DATE
CITY ENGINEER		
STANDARD DWG. NO.		W-18



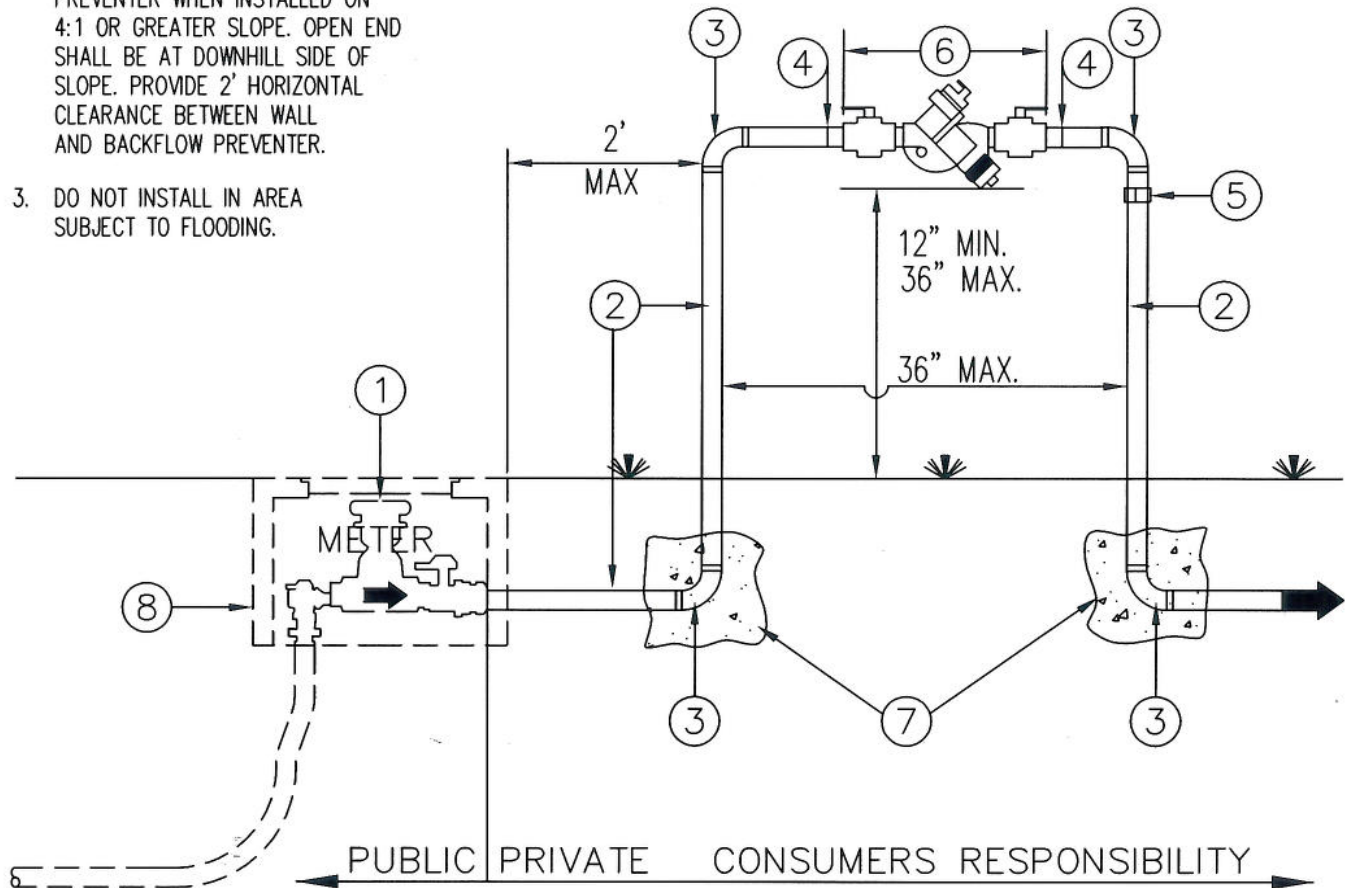
NOTES:

1. BASED ON 225 PSI TEST PRESSURE AND BEARING VALUES OF DRY SOILS.
2. VALUES FROM CURVES ARE FOR TEES AND DEADENDS, I.E. ; STRAIGHT LINE THRUST.
FOR 90° BEND: 1.4 VALUE FROM CURVE.
FOR 45° BEND: 0.8 VALUE FROM CURVE.
FOR 22 1/2° BEND: 0.4 VALUE FROM CURVE.
3. FOR CONDITIONS NOT COVERED BY CURVES, SPECIAL THRUST WALLS, THRUST BLOCKS AND ANCHORS MUST BE CALCULATED AND APPROVED.

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			THRUST BLOCK BEARING AREAS	CITY ENGINEER DATE
				STANDARD DWG. NO. W-19

NOTES:

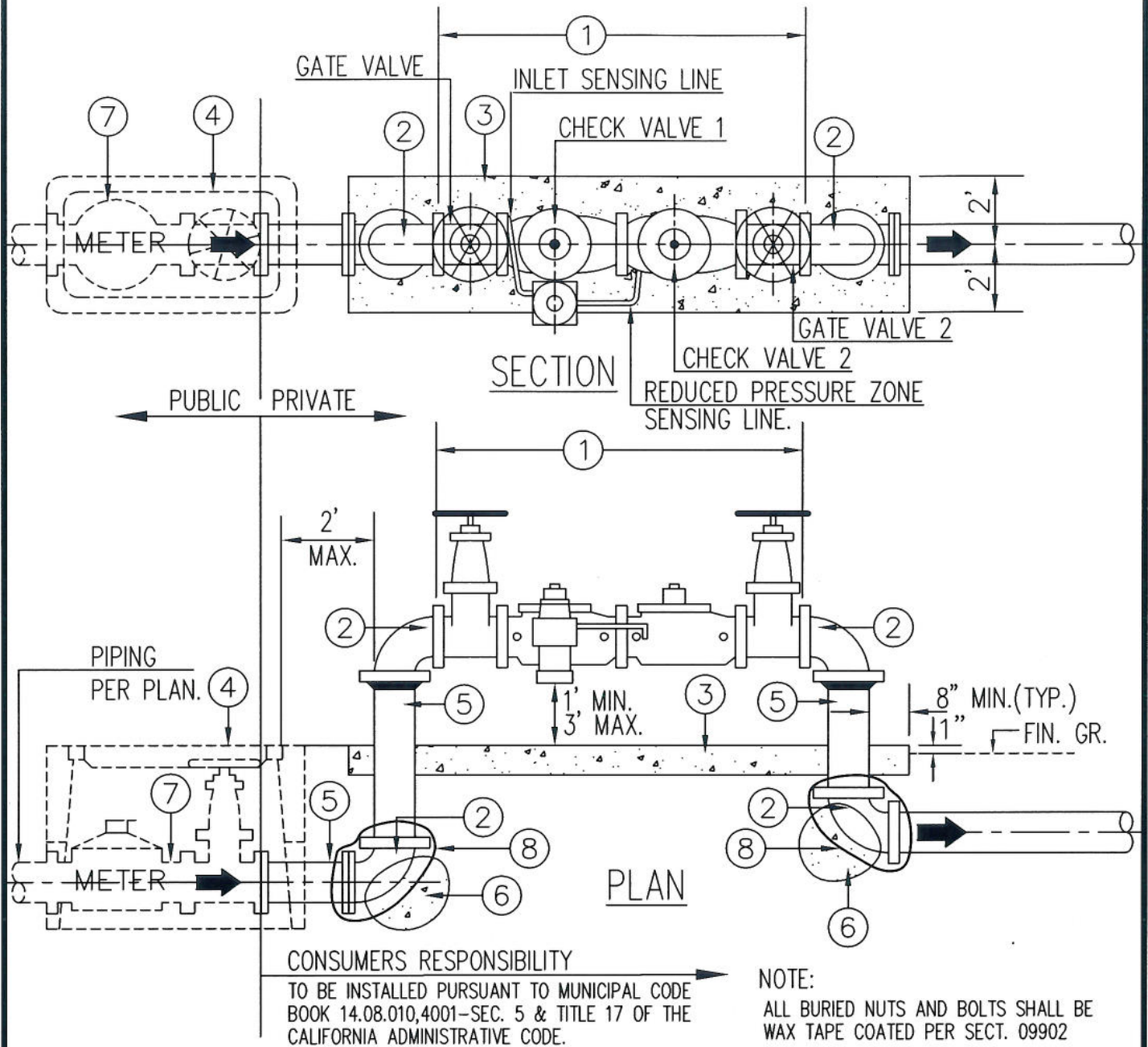
1. THERE SHALL BE NO FITTINGS OR CONNECTIONS BETWEEN THE METER AND BACKFLOW ASSEMBLY.
2. CONSTRUCT 2' HIGH RETAINING WALL ON 3 SIDES OF BACKFLOW PREVENTER WHEN INSTALLED ON 4:1 OR GREATER SLOPE. OPEN END SHALL BE AT DOWNHILL SIDE OF SLOPE. PROVIDE 2' HORIZONTAL CLEARANCE BETWEEN WALL AND BACKFLOW PREVENTER.
3. DO NOT INSTALL IN AREA SUBJECT TO FLOODING.



TO BE INSTALLED PURSUANT TO MUNICIPAL CODE BOOK 14.08.010,4001-SEC.5 & TITLE 17 OF THE CALIFORNIA ADMINISTRATIVE CODE.

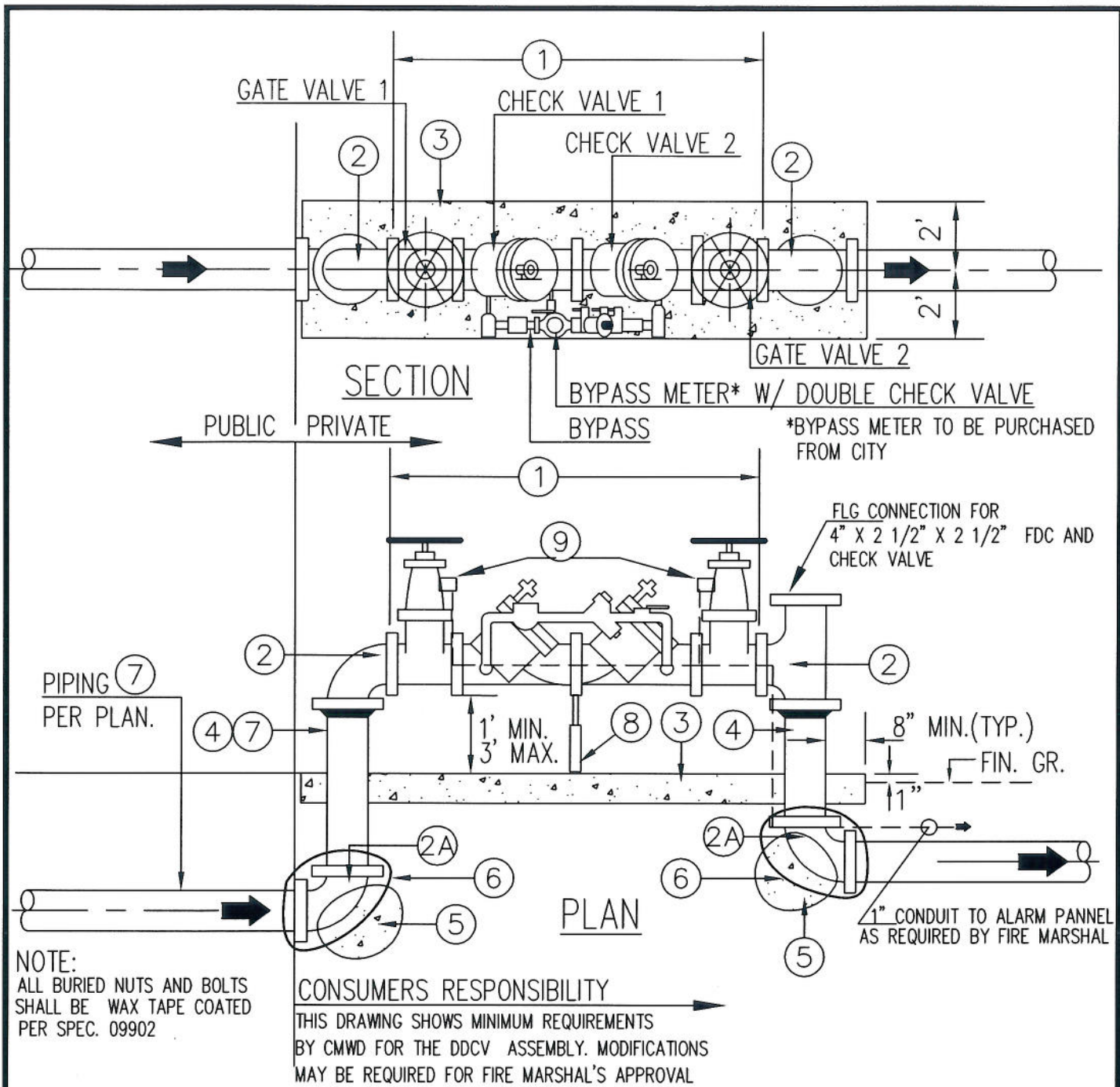
ITEM	DESCRIPTION	SPEC/DWG
1	METER AND VALVE (BY DISTRICT).	
2	TYPE K HARD OR TYPE L HARD COPPER OR BRASS RISER.	W-9
3	COPPER OR BRASS 90° ELBOW (SOLDER JOINTS OR THREADED FITTINGS).	
4	COPPER OR BRASS NIPPLE.	
5	BRASS UNION.	
6	APPROVED BACKFLOW PREVENTER ASSEMBLY.	
7	CONCRETE THRUST BLOCK	
8	METER BOX (BY DISTRICT).	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			2 INCH AND UNDER BACKFLOW INSTALLATION	CITY ENGINEER DATE
				STANDARD DWG. NO. W-20



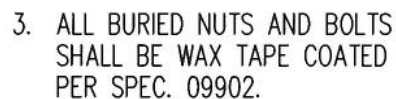
ITEM	DESCRIPTION	SPEC/DWG
1	APPROVED CHECK VALVE AND BACKFLOW PREVENTER (RP) ASSEMBLY.	
2	FL. 90° BEND (SIZE X TYPE) PER PLAN.	
3	4 INCH THICK CONCRETE PAD (2000 PSI).	
4	METER BOX (BY DISTRICT).	
5	FL. 10 GA CML&C C-150 STEEL SPOOL WITH S.O.W.O. FLANGE.	
6	THRUST BLOCKING (3250 PSI). 560-C-3250	W-19
7	VALVE AND METER (BY DISTRICT).	
8	POLYETHYLENE ENCASEMENT	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			3 INCH AND ABOVE	CITY ENGINEER DATE
			BACKFLOW INSTALLATION	STANDARD DWG. NO. W-21



ITEM	DESCRIPTION	SPEC/DWG
1	APPROVED DOUBLE CHECK VALVE AND DETECTOR ASSEMBLY.	
2	FL. 90° BEND OR TEE WITH HOSE FITTINGS	
2A	DEPENDING ON THE PIPELINE MATERIAL SHOWN ON PLANS, 90° BEND CAN BE FLXPO OR FLXMJ	
3	4 INCH THICK CONCRETE PAD (2000 PSI).	
4	FL. 10 GA CML&C C-150 STEEL SPOOL WITH S.O.W.O. FLANGE.	
5	THRUST BLOCKING (3250 PSI). 560-C-3250	W-19
6	POLYETHYLENE ENCASEMENT	
7	6" MINIMUM DIAMETER - REDUCE DIAMETER IN RISER, ABOVE FINISH	
8	GALV. PIPE SUPPORT; FEE & MASON FIG. 291	
9	TAMPER SWITCH REQUIRED BY FIRE MARSHAL	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	
			ABOVE GROUND DOUBLE CHECK VALVE DETECTOR ASSEMBLY	Robert T. Johnson Jr. 7/10/08 CITY ENGINEER DATE
				STANDARD DWG. NO. W-22



REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT
			EXTENSION STEM AND MARKER POST

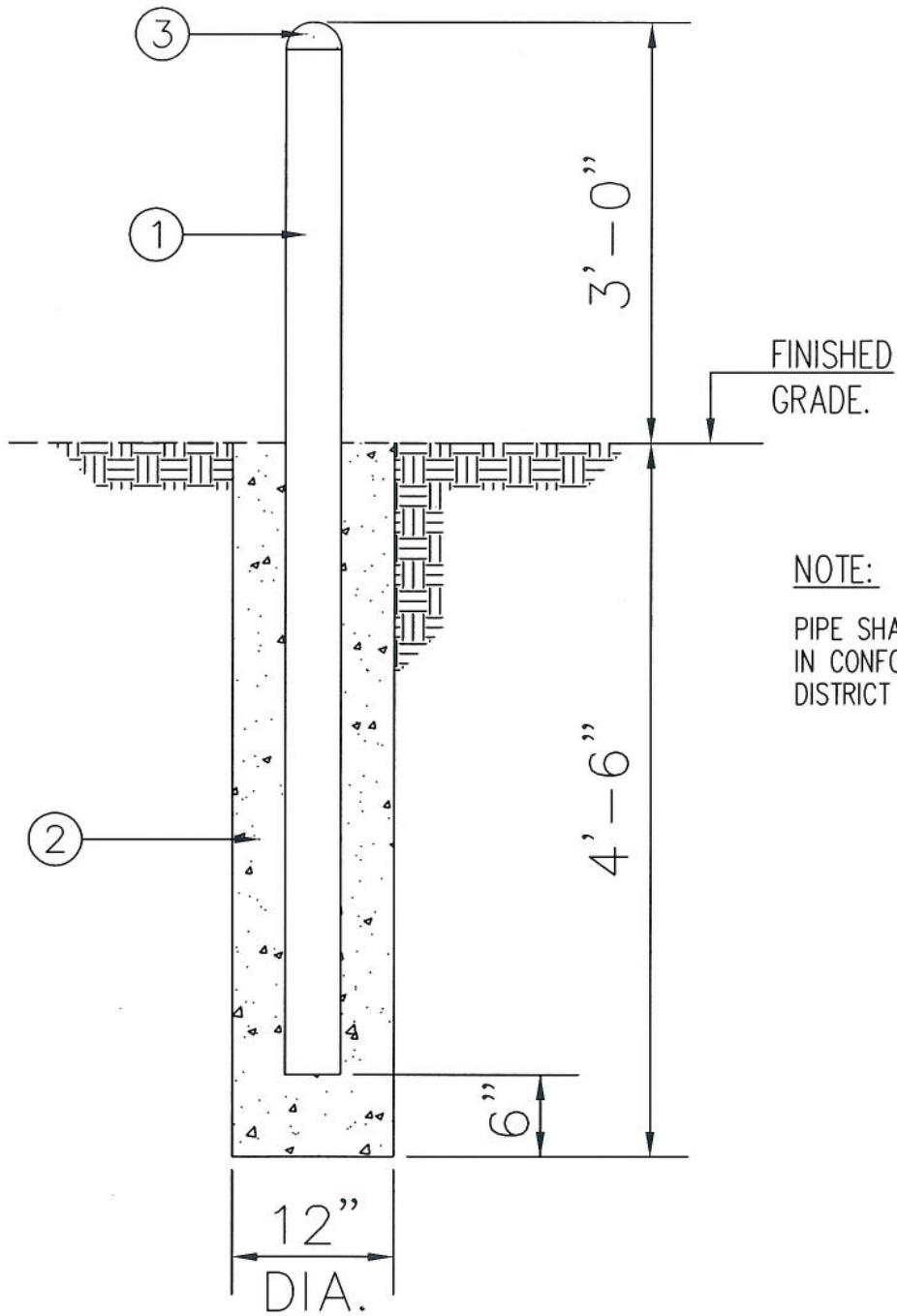
Robert T. Johnson Jr. 7/10/08

CITY ENGINEER

STANDARD DWG. NO.

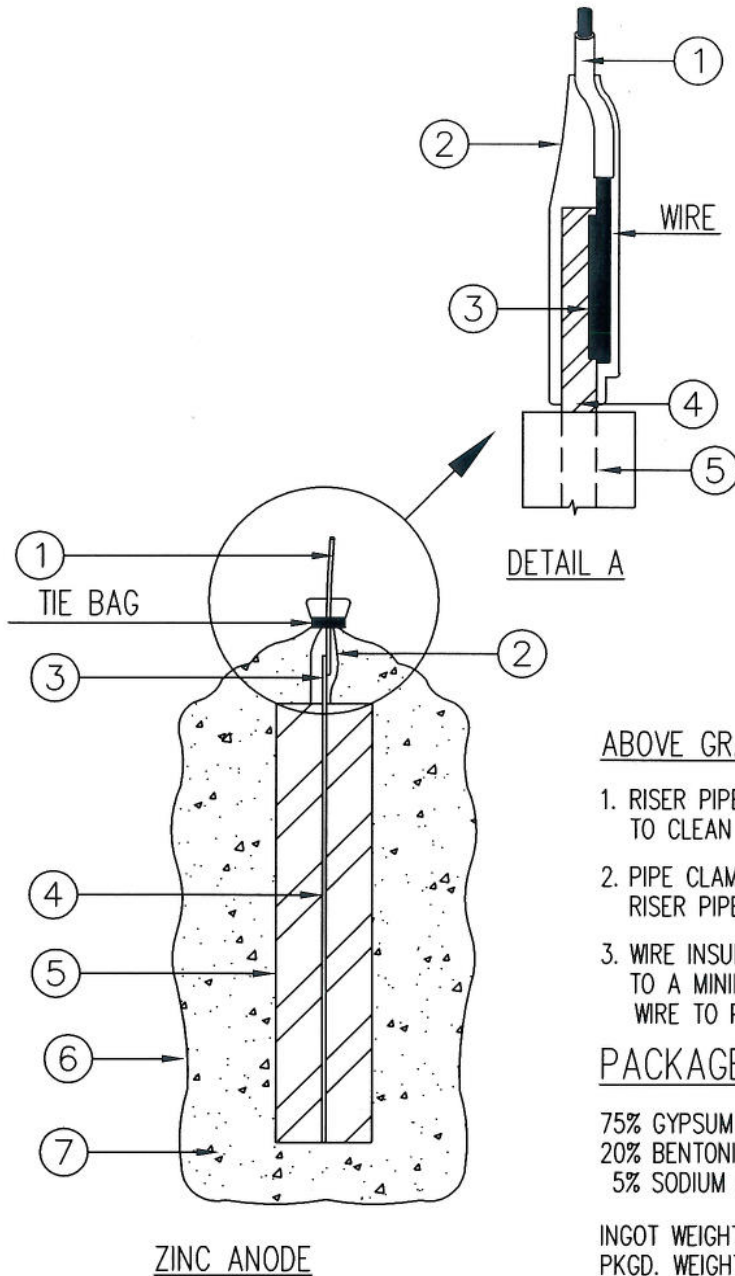
DATE

W-23



ITEM	DESCRIPTION	SPEC/DWG
1	4" STEEL PIPE. GALVANIZED / PAINTED	
2	470-C-2000 CONCRETE FOOTING.	
3	FILL PIPE WITH 470-C-2000 CONCRETE (ROUND OFF TOP).	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 2/10/08
			PROTECTION POST	CITY ENGINEER DATE
				STANDARD DWG. NO. W-24



ABOVE GRADE CONNECTION NOTES:

1. RISER PIPE SHALL BE WIRE BRUSHED TO CLEAN BRIGHT METAL.
2. PIPE CLAMP SHALL BE LOCATED ON RISER PIPE.
3. WIRE INSULATION SHALL BE STRIPPED TO A MINIMUM LENGTH TO CONNECT WIRE TO PIPE CLAMP.

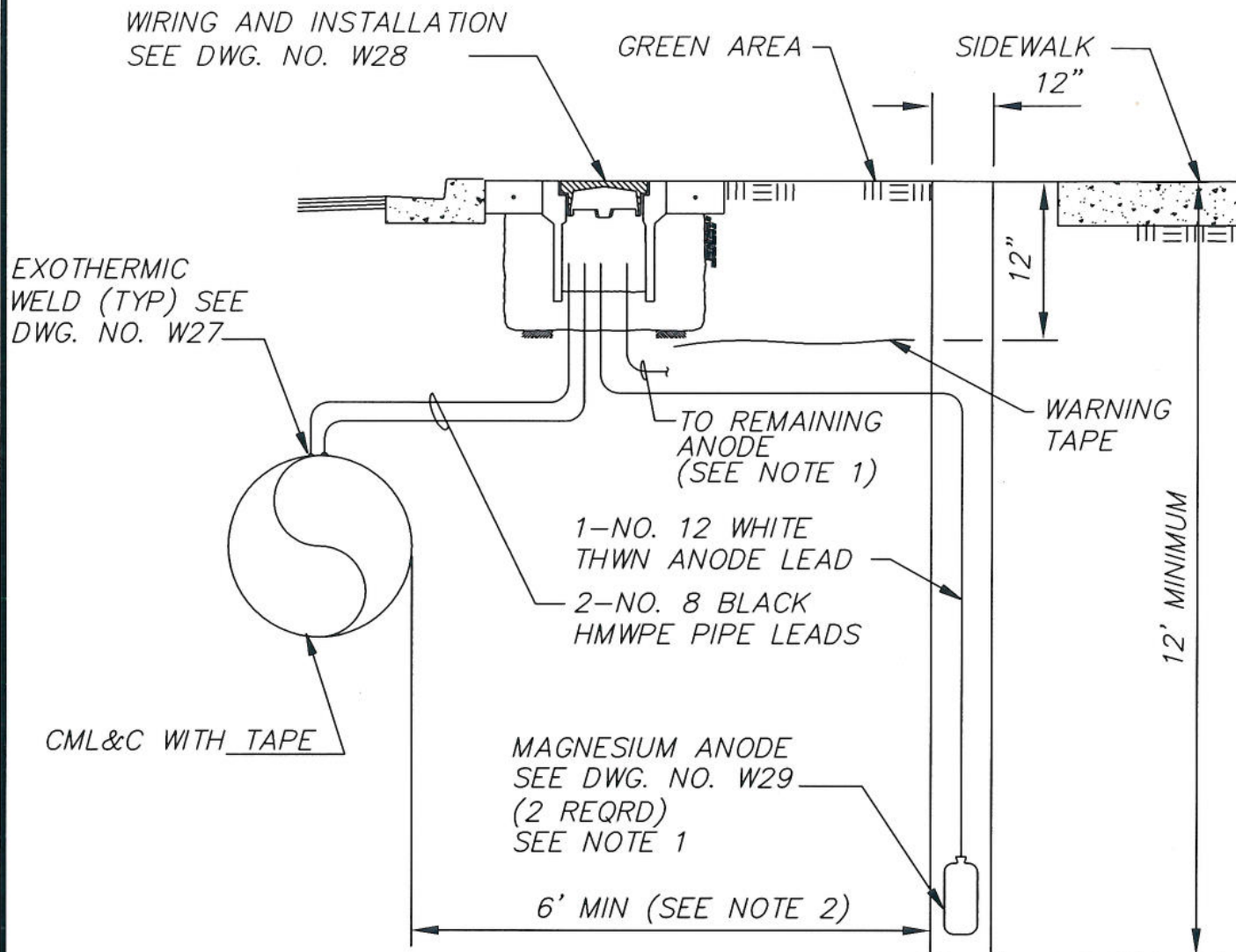
PACKAGED BACKFILL COMPOSITION:

75% GYPSUM
20% BENTONITE
5% SODIUM SULFATE

INGOT WEIGHT: 30 LBS.
PKGD. WEIGHT: 70 LBS. APPROX.

ITEM	DESCRIPTION	SPEC/DWG
1	ANODE LEAD NO.12 AWG STRD. COPPER WIRE W/ THW INSULATION.	
2	HEAT SHRINKABLE SLEEVE.	
3	SILVER SOLDER CONNECTION.	
4	1/4" DIAMETER GALVANIZED STEEL CORE.	
5	2"X2"X30" ZINC ALLOY INGOT.	
6	CLOTH BAG.	
7	PACKAGED BACKFILL.	
8	BRASS OR COPPER RISER PIPE.	
9	BRASS OR COPPER PIPE CLAMP WITH SCREW TERMINAL.	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	
			ZINC ANODE AND CONNECTORS FOR 1" AND 2" WATER SERVICE	Robert T. Johnson Jr. 7/10/08 CITY ENGINEER DATE
				STANDARD DWG. NO. W-25

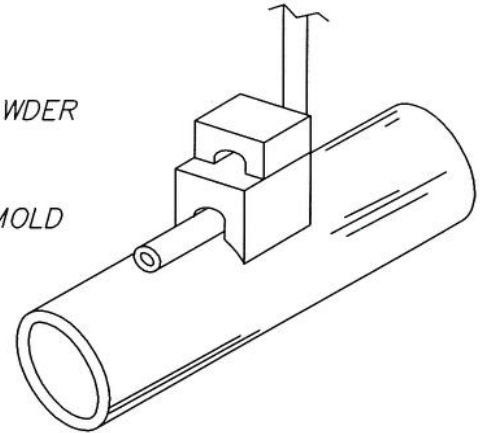
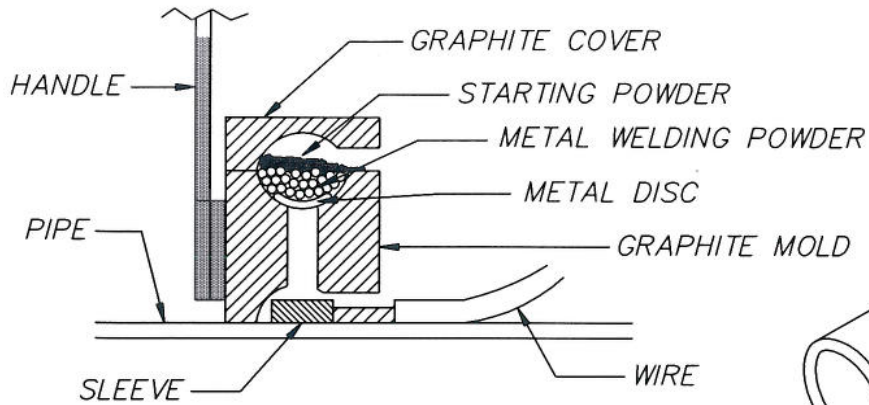


NOTES:

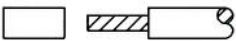
1. 1 ANODE SHOWN, 2 ARE REQUIRED. ANODES TO BE INSTALLED PARALLEL TO THE PIPE, 15 FEET APART IN AUGERED HOLES 12' DEEP. ANODE LEADS TO BE TRENCHED TO CTS AT A DEPTH OF 36".
2. INSTALL ANODES AT A 6' MINIMUM DISTANCE FROM PIPE.

NO SCALE

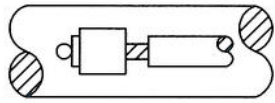
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			AT GRADE 2-WIRE TEST STATION	CITY ENGINEER DATE
			WITH ANODES	STANDARD DWG. NO. W-26



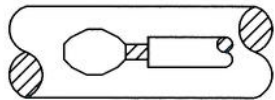
STEP 1. FILE STRUCTURE CONNECTION AREA (3 IN x 3 IN) TO BARE SHINY METAL AND CLEAN.



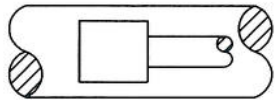
STEP 2. STRIP INSULATION FROM WIRE. ATTACH SLEEVE WHERE REQUIRED BY MANUFACTURER.



STEP 3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE WITH FLINT GUN.



STEP 4. REMOVE SLAG FROM CONNECTION AND PEEN WELD FOR SOUNDNESS.



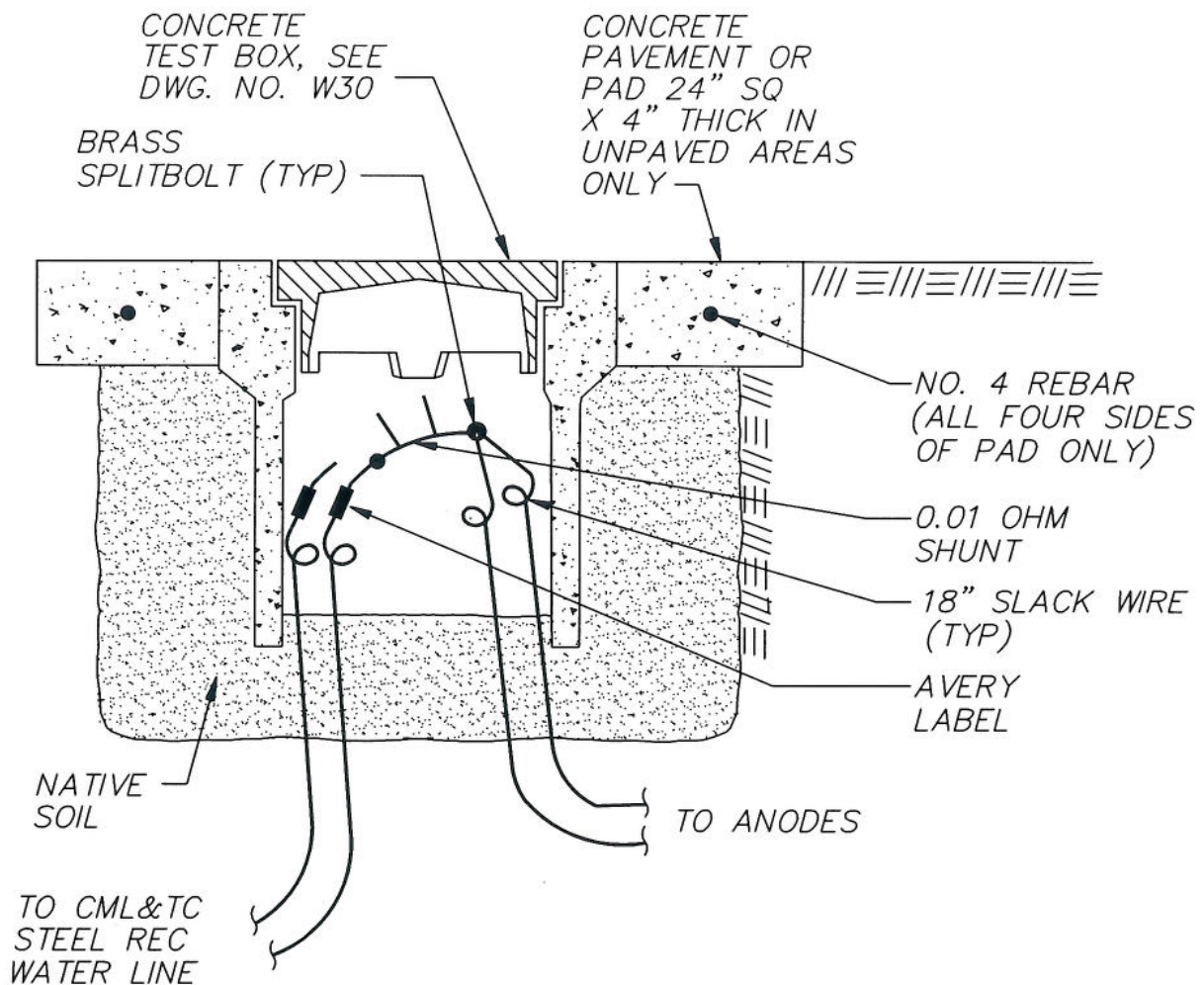
STEP 5. COVER CONNECTION AND EXPOSED STRUCTURE SURFACE WITH A BITUMINOUS COATING COMPOUND. PLACE PLASTIC SHIELD CAP FIRMLY OVER CONNECTION.

NOTES:

1. ALL WIRE WELDS SHALL BE MINIMUM 3 INCHES APART.
2. STANDARD WELD CARTRIDGES SHALL BE USED FOR STEEL SURFACES,

NO SCALE

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson, 7/10/08
			EXOTHERMIC WELD PROCESS	CITY ENGINEER DATE
				STANDARD DWG. NO. W-27



WIRE I.D. LEGEND

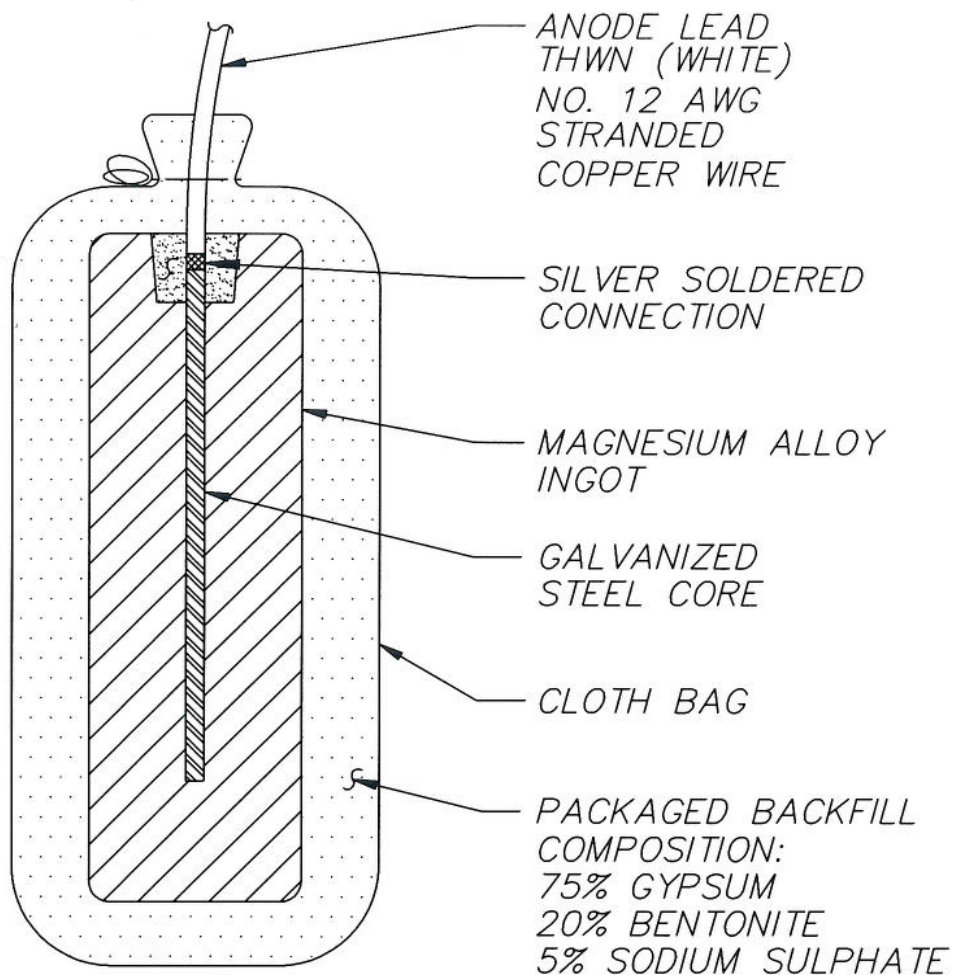
<u>WIRE</u>	<u>SIZE</u>	<u>LABEL IDENTIFICATION</u>
A&B	2 - NO 8 HMWPE	STL/CML&TC RW

NOTES:

1. NO WIRE OR CABLE SPLICES ARE PERMITTED EXCEPT AS INDICATED IN THE DRAWINGS OR AS SPECIFICALLY APPROVED BY THE ENGINEER.
2. WIRES SHALL BE TAGGED USING MINIMUM 10 PT. FONT AND CONTAIN:
PIPELINE MATERIAL & SIZE
DATE INSTALLED
PIPELINE STATION NO.
3. PROVIDE 18" SLACK WIRE AT WELD TO PIPE AND COILED IN TEST BOX.

NO SCALE

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			2-WIRE TEST STATION WITH ANODES	CITY ENGINEER DATE
			WIRING DIAGRAM	STANDARD DWG. NO. W-28



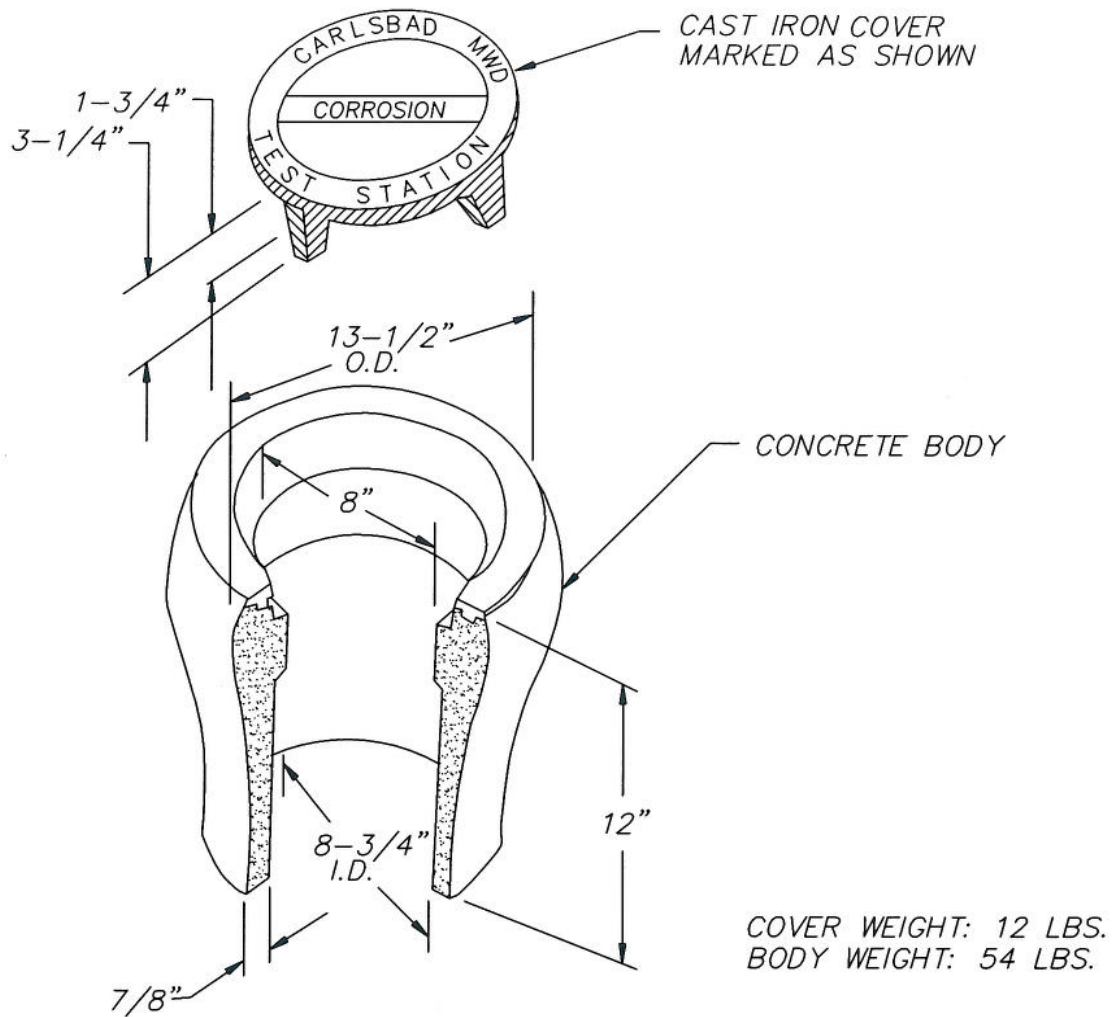
MAGNESIUM INGOT
 DIMENSIONS:
 5" X 6" X 32" LONG
 INGOT WEIGHT: 48 LBS.
 PKGD WEIGHT: 105 LBS.
 (APPROX.)

CHEMICAL COMPOSITION
(HIGH POTENTIAL)

<u>ELEMENT</u>	<u>CONTENT %</u>
Aluminum	0.010
Manganese	0.50 TO 1.30
Copper	0.02 MAX
Nickle	0.001 MAX
Iron	0.03 MAX
Other	0.05 MAX
Magnesium	BALANCE

NO SCALE

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 1/10/08
			MAGNESIUM ANODE	CITY ENGINEER DATE
				STANDARD DWG. NO. W-29



NOTES:

1. ALL AT GRADE TEST STATIONS SHALL BE THE CIRCULAR, CONCRETE, AT-GRADE TYPE WITH A METAL LID.
 - A. BOTTOM OF TEST BOX SHALL BE NATIVE SOIL.
 - B. A REINFORCED CONCRETE PAD (24" SQUARE X 4" THICK) IS REQUIRED AROUND TEST BOXES LOCATED IN UNPAVED AREAS.
 - C. PLACE TEST BOX BEHIND SIDEWALK WITH APPROVAL OF CITY OF CARLSBAD. DO NOT PLACE IN STREET OR MEDIAN.

NO SCALE

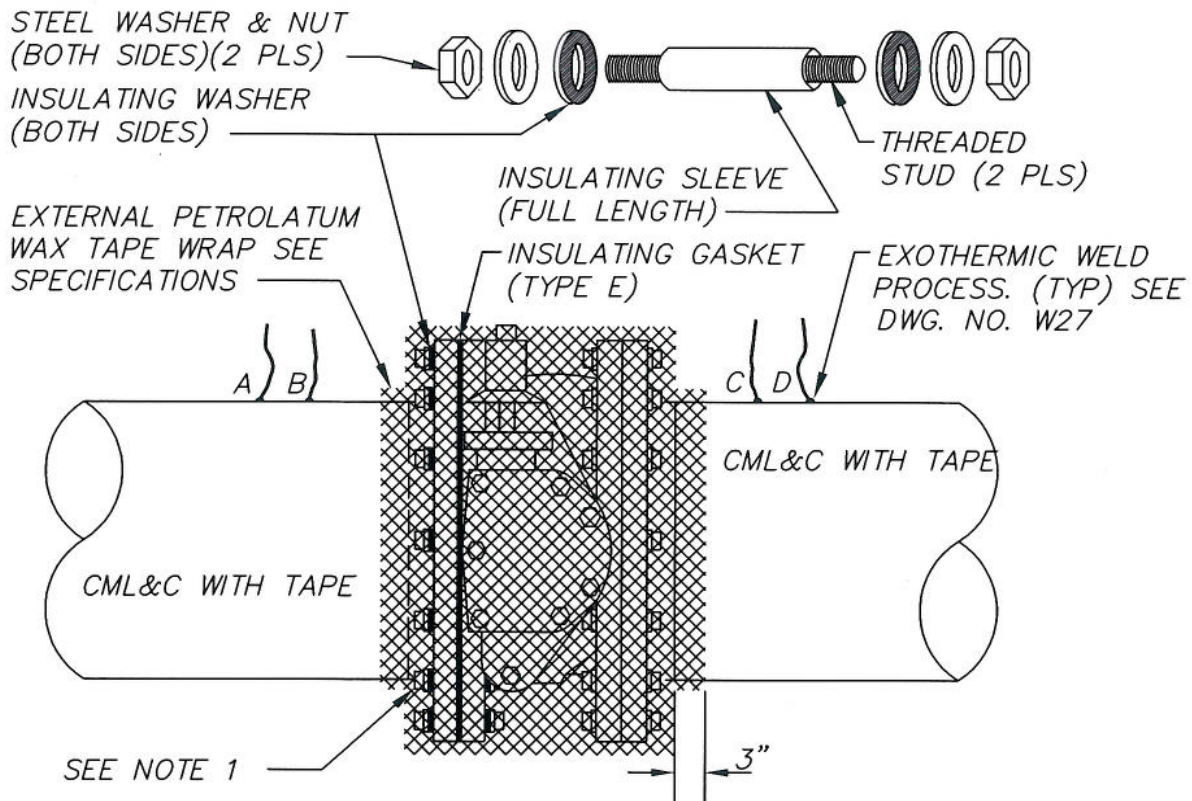
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 2/19/08
			CONCRETE TEST BOX	CITY ENGINEER DATE
				STANDARD DWG. NO. W-30

INSULATING MATERIALS:

GASKET - TYPE "E" G10 GLASS
W/ RECT. O-RING

SLEEVE - G10 GLASS

WASHER - G10 GLASS

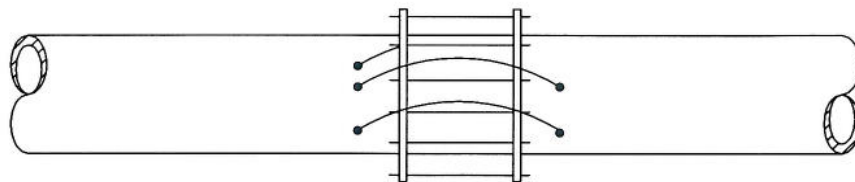


NOTES:

1. FULL LENGTH INSULATING SLEEVES REQUIRED AT ALL THRU-FLANGE BOLTS OR STUDS. HALF LENGTH SLEEVES REQUIRED AT THREADED BOLT HOLES AT VALVE BONNET AND BASE.
2. INSTALL TEST BOX BEHIND CURB SIMILAR TO DETAIL 1 ON THIS SHEET.

NO SCALE

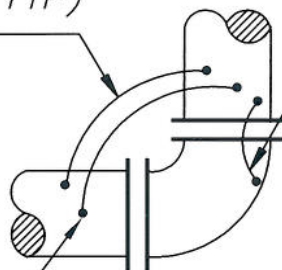
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 2/10/03
			BURIED INSULATING FLANGE	CITY ENGINEER DATE
				STANDARD DWG. NO. W-31



FLEXIBLE COUPLING

2-BOND WIRES-AWG NO. 2
STRD. COPPER WIRE (TYP)
WITH HMWPE INSUL.

1-NO 6 AWG HMWPE
(TYP) SEE NOTE 4

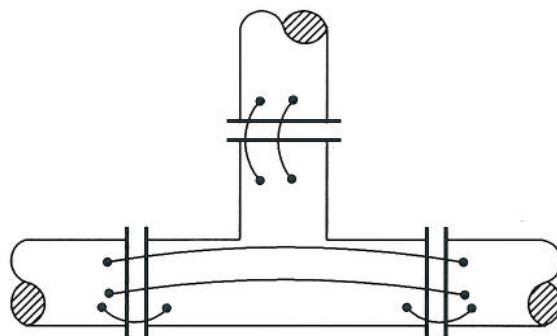


BEND

EXOTHERMIC WELD
(TYP) SEE DWG. NO. W27



SPOOL



TEE



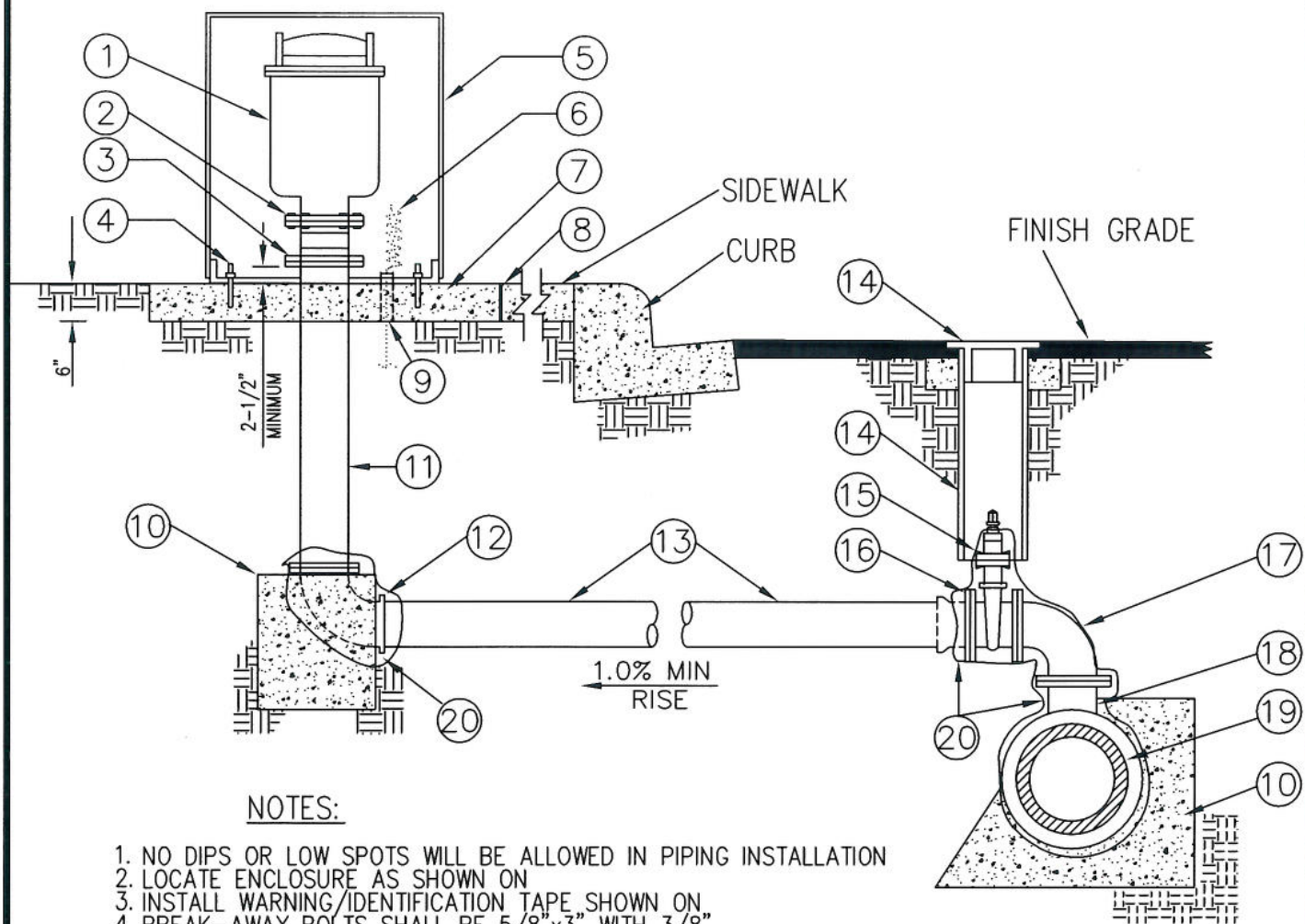
VALVE

NOTES:

1. ALL WIRE WELDS SHALL BE 3" APART MIN.
2. ALL BOND WIRES SHALL BE INSTALLED AT MINIMUM LENGTHS.
3. BOND WIRES SHALL NOT BE INSTALLED ACCROSS INSULATING JOINTS.
4. BOND WIRE SIZE SHALL BE AWG NO 2. TWO ARE REQUIRED.
ONE NO. 6 AWG HMWPE IS REQUIRED FROM PIPE TO VALVE BODY,
SPOOL, COUPLING, AND TEE.

NO SCALE

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			MECHANICAL JOINT BOND	CITY ENGINEER DATE
				STANDARD DWG. NO. W-32

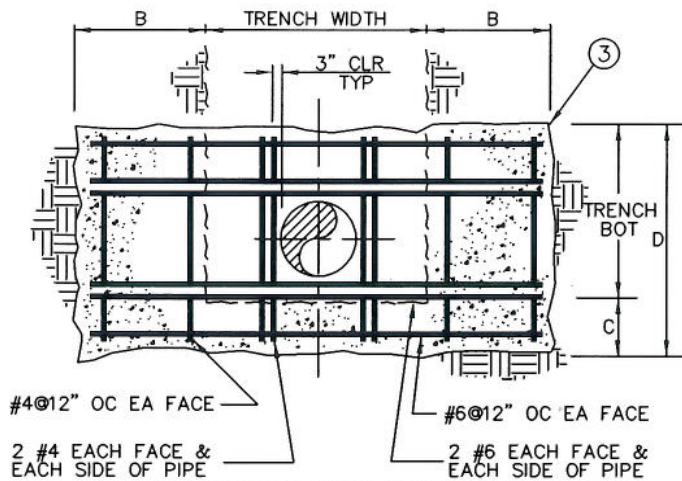


NOTES:

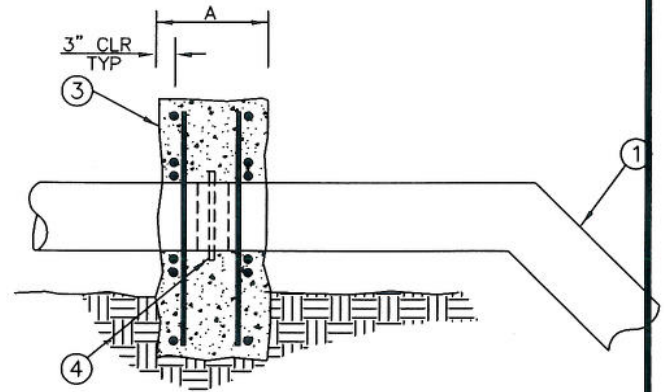
1. NO DIPS OR LOW SPOTS WILL BE ALLOWED IN PIPING INSTALLATION
2. LOCATE ENCLOSURE AS SHOWN ON
3. INSTALL WARNING/IDENTIFICATION TAPE SHOWN ON
4. BREAK-AWAY BOLTS SHALL BE 5/8"x3" WITH 3/8" HOLE DRILLED IN THE SHAFT OF THE BOLT. INSTALL WITH NUTS ON TOP OF THE FLANGE. BOLTS SHAFT SHALL BE FILLED WITH SILICONE SEALANT.
5. AIR AND VACUM VALVES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SECTION 15151 OF THE SPECIFICATIONS
6. CONNECTIONS TO STEEL MAINS SHALL BE IN ACCORDANCE WITH SECTION 15061
7. MATERIALS SHALL BE SELECTED FROM THE APPROVED MATERIALS LIST

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	4" AUTOMATIC COMBINATION AIR RELEASE & AIR /VACUUM VALVE ASSEMBLY	10	CONCRETE THRUST/ANCHOR BLOCK
2	BREAK-AWAY BOLTS, SEE NOTE 5	11	4" FLD DI PIPE x REQUIRED LENGTH (MAXIMUM OF 2 SPOOLS)
3	4"x8" LONG FLG'D 8-BOLT SPOOL WITH BREAK-OFF GROOVES	12	4" FLG x MJ/PO 90° BEND
4	1/2"x3" STAINLESS STEEL DROP-IN ANCHORS (3 EA @120° APART)	13	4" C-900 PVC PIPE
5	AVA ASSEMBLY ENCLOSURE	14	8" GATE WELL
6	TRACER WIRE (IF REQUIRED)	15	4" FLG x MJ/PO/FLG RWCV
7	42"x42"x6" THICK CONCRETE SLAB	16	4" FLG x MJ/PO 90° ADAPTER (IF REQUIRED)
8	COLD JOINT STRIP	17	4" FLANGE 90° BEND
9	1" PVC CONDUIT FOR TRACER WIRE INSTALLED 2" ABOVE SLAB	18	4" MJ/PO/FLG x FLG TEE
		19	WATER MAIN
		20	POLYETHYLENE ENCASEMENT & WAX TAPE WRAP BURIED NUTS & BOLTS PER SPEC. 09902

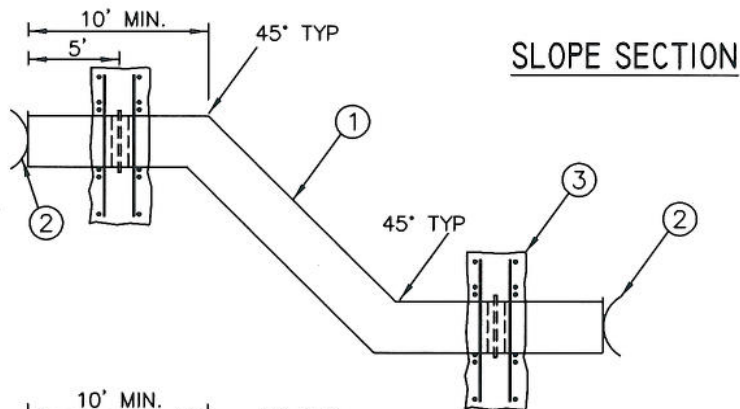
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson Jr. 7/10/08
			4" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE INSTALLATIONS	CITY ENGINEER DATE
				STANDARD DWG. NO. W-33



ANCHOR BLOCK SECTION

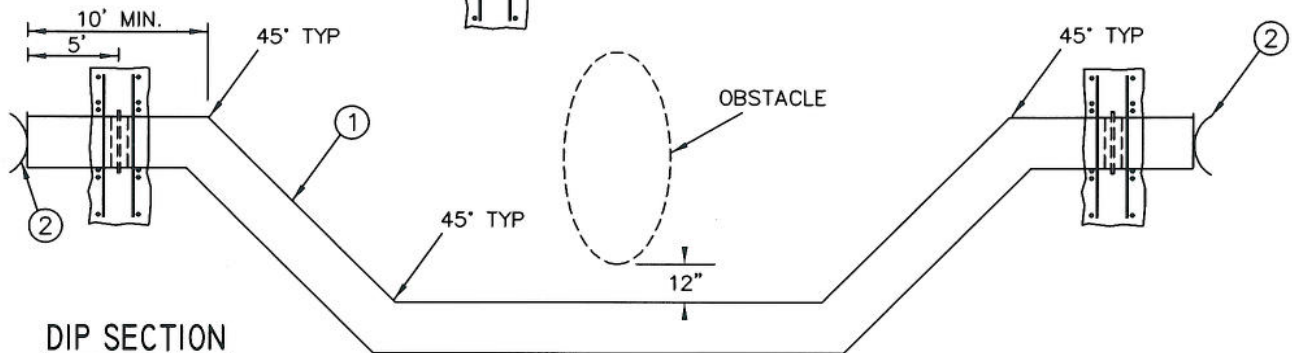


ANCHOR BLOCK ELEVATION



SLOPE SECTION

PIPE SIZE	A	B	C	D
4"	ALL DIMENSIONS			
6"	CALCULATED			
8"	BY ENGINEER			
10"	AND SUBMITTED			
12"	FOR APPROVAL			



DIP SECTION

ITEM	DESCRIPTION	SPEC/DWG
1	STEEL PIPE, CML&C, WELDED JOINTS	
2	FLANGE X PUSH JOINT ADAPTOR	
3	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	
4	1" THICK X 3" HIGH WELD STL RING	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	Robert T. Johnson, Jr. 7/10/04
			WELDED STEEL PIPE SECTION WITH THRUST WALLS FOR SLOPES AND DIPS	CITY ENGINEER DATE
				STANDARD DWG. NO. W-34